

74004

CRUISE REPORT  
U.S.G.S.-N.O.A.A. COOPERATIVE CRUISE  
BALTIMORE CANYON TROUGH AREA  
N.O.A.A.-N.O.S. SHIP MT. MITCHELL MSS-22  
MAY 15-30, 1974

## INTRODUCTION

A cooperative cruise between the Office of Marine Geology U.S. Geological Survey (U.S.G.S.), Woods Hole, Massachusetts and the National Ocean Survey (N.O.S.) and National Marine Fisheries Service (N.M.F.S.) of the National Oceanic and Atmospheric Administration (N.O.A.A.) was conducted within the Baltimore Canyon Trough area from May 15 to May 30, 1974. The Baltimore Canyon Trough (fig. 1) is a structural depression which underlies the middle and outer continental shelf off the coasts of New Jersey, Delaware, and Maryland; it is considered a likely area for petroleum exploration and possibly production in the near future. Three sub-areas within the Baltimore Canyon Trough area were selected for detailed study (fig. 2). These areas (based on public information) are considered most likely for lease sales.

The purpose of the U.S.G.S.-N.O.A.A. cooperative cruise in the Baltimore Canyon Trough area was to commence studies of the movement and characteristics of bottom sediments and of the abundance and distribution of benthic organisms. The following acoustic systems were used to delineate the bathymetry and sub-bottom structure: (1) Ross Model 5000 shallow water fathometer; (2) 3.5 kHz high-resolution sub-bottom system; and (3) the EG&G Uniboom high-resolution sub-bottom system. Bottom samples were obtained with a Smith-McIntyre ( $0.10 \text{ m}^2$ ) grab. Water samples

were collected in Nansen bottles. An air-gun acoustic system and a side-scan sonar system were also aboard during the cruise, but these were not used. The air-gun system was taken aboard for use in case the EG&G Uniboom system failed to function. The side-scan sonar system was not used because its signal interfered with the 3.5 kHz and EG&G Uniboom systems.

The cruise began and ended at N.O.S., Atlantic Marine Center, 439 West York Street, Norfolk, Virginia. The cruise was aboard the N.O.A.A.- N.O.S. Ship MT. MITCHELL (MSS-22).

## SCIENTIFIC PERSONNEL

The scientific party during the cruise included the following personnel from the U.S.G.S., Office of Marine Geology, Woods Hole, Massachusetts:

Dr. Harley J. Knebel - - - - Chief Scientist  
Mr. Frank Jennings - - - - Electronics Technician  
Mr. Charles J. O'Hara - - - - Cruise Leader  
Mr. David Barnes  
Mr. Robert Commeau  
Ms. Patricia Forrestel  
Mr. Charles Meeder  
Ms. Barbara Tausey

The following personnel collected the benthic organisms and the heavy-metal samples and determined the temperature, salinity, and dissolved oxygen content of bottom water samples:

Mr. David Radosh - - - - - N.M.F.S., Sandy Hook Labs.  
Ens. Karen O'Donnell - - - - N.O.A.A. Commissioned Corps  
Ens. Robert Pawlowski - - - - N.O.A.A. Commissioned Corps

The following personnel from the MT. MITCHELL collected the necessary water samples and annotated and checked the bathymetric records:

Mr. Thomas J. McConnell - - - Chief Survey Technician  
Mr. Frank Lamison  
Mr. Everett Marsh  
Mr. Paul Spithailer

## OPERATIONAL STATISTICS

### A. Total for the Entire Cruise

1. Tracklines (Entrance Chesapeake Bay - - 1269 nm (2348 km)  
and return)
2. Fathometer Records - - - - - 1159 nm (2144 km)
3. 3.5 kHz Records - - - - - 978 nm (1809 km)
4. EG&G Uniboom Records - - - - - 966 nm (1787 km)
5. Sample Stations - - - - - 93
6. Bottom Sediment Grabs - - - - - 228
  - a. Samples for size/composition - - - - 114
  - b. Samples for benthic organisms - - - 114
  - c. Samples for heavy metals - - - - - 33
  - d. Samples for foraminifera - - - - - 114
7. Bottom Water Samples - - - - - 36
  - a. Temperature - - - - - 36
  - b. Salinity - - - - - 36
  - c. Dissolved Oxygen - - - - - 36

B. Total for Sub-area 1

1.	Tracklines - - - - -	433 nm (801 km)
2.	Fathometer Records - - - - -	433 nm (801 km)
3.	3.5 kHz Records - - - - -	312 nm (577 km)
4.	EG&G Uniboom Records - - - - -	312 nm (577 km)
5.	Sample Stations - - - - -	87
6.	Bottom Sediment Grabs - - - - -	-216
	a. Samples for size/composition - - - - -	108
	b. Samples for benthic organisms - - - - -	108
	c. Samples for heavy metals - - - - -	-30
	d. Samples for foraminifera - - - - -	108
7.	Bottom Water Samples - - - - -	32
	a. Temperature - - - - -	32
	b. Salinity - - - - -	32
	c. Dissolved Oxygen - - - - -	-32

C. Total for Sub-area 2

1.	Tracklines - - - - -	133 nm (246 km)
2.	Fathometer Records - - - - -	133 nm (246 km)
3.	3.5 kHz Records - - - - -	133 nm (246 km)
4.	EG&G Uniboom Records - - - - -	133 nm (246 km)
5.	Sample Stations - - - - -	0
6.	Bottom Sediment Grabs - - - - -	0
7.	Bottom Water Samples - - - - -	0

D. Total for Sub-area 3

1.	Tracklines - - - - -	200 nm (370 km)
2.	Fathometer Records - - - - -	200 nm (370 km)
3.	3.5 kHz Records - - - - -	200 nm (370 km)
4.	EG&G Uniboom - - - - -	200 nm (370 km)
5.	Sample Stations - - - - -	6
6.	Bottom Sediment Grabs - - - - -	12
	a. Samples for size/composition - - - - -	6
	b. Samples for benthic organisms - - - - -	6
	c. Samples for heavy metals - - - - -	3
	d. Samples for foraminifera - - - - -	6
7.	Bottom Water Samples - - - - -	4
	a. Temperature - - - - -	4
	b. Salinity - - - - -	4
	c. Dissolved Oxygen - - - - -	4

E. Total Exclusive of Sub-areas

1.	Tracklines - - - - -	503 nm (930 km)
2.	Fathometer Records - - - - -	393 nm (727 km)
3.	3.5 kHz Records - - - - -	333 nm (616 km)
4.	EG&G Uniboom Records - - - - -	321 nm (594 km)
5.	Sample Stations - - - - -	0
6.	Bottom Sediment Grabs - - - - -	0
7.	Bottom Water Samples - - - - -	0



BATHYMETRIC MAP  
OF  
SHIELD, SLOPE, AND RISE  
BALTIMORE CANYON  
AREA



CONTOUR INTERVALS  
OF 200 METERS

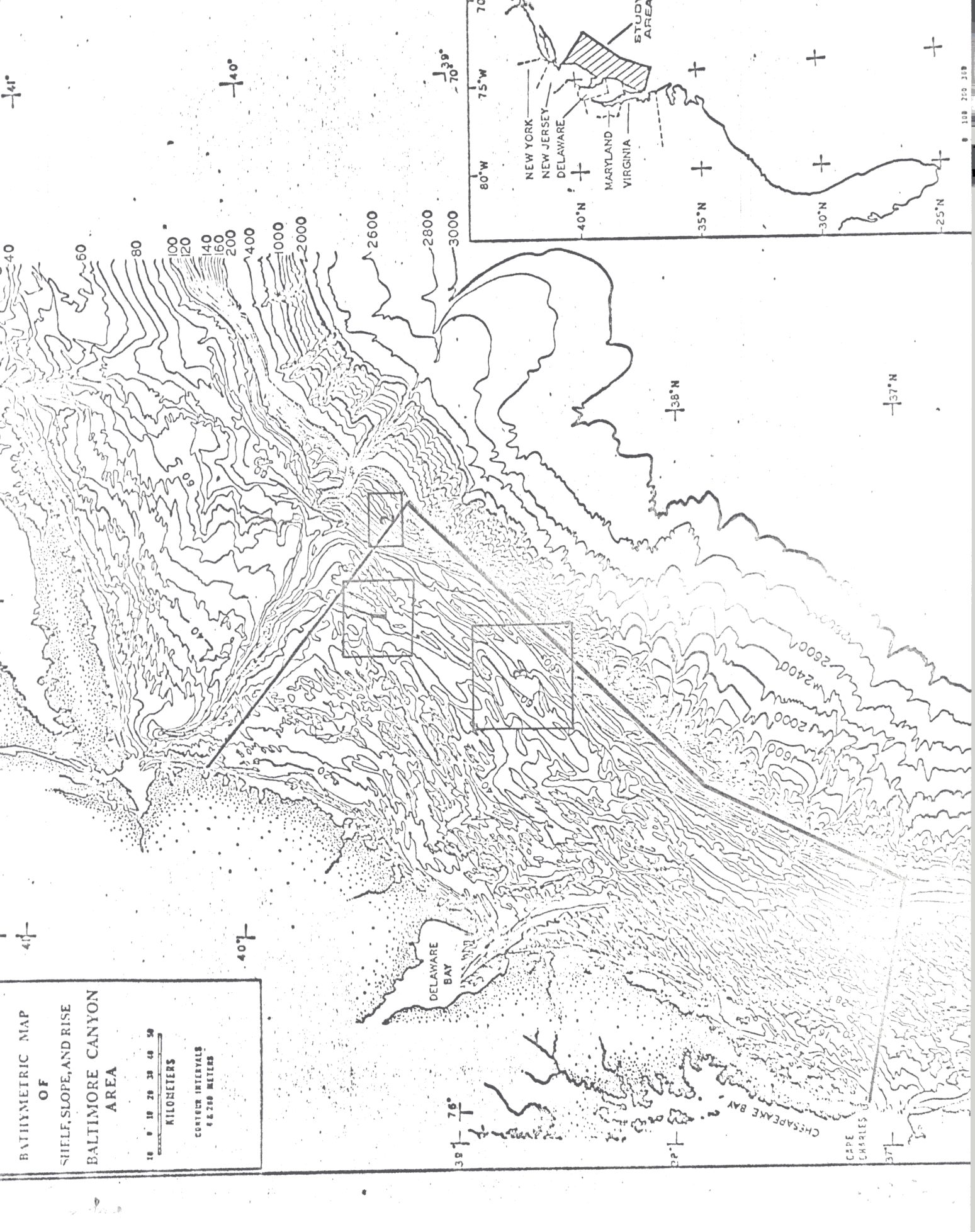
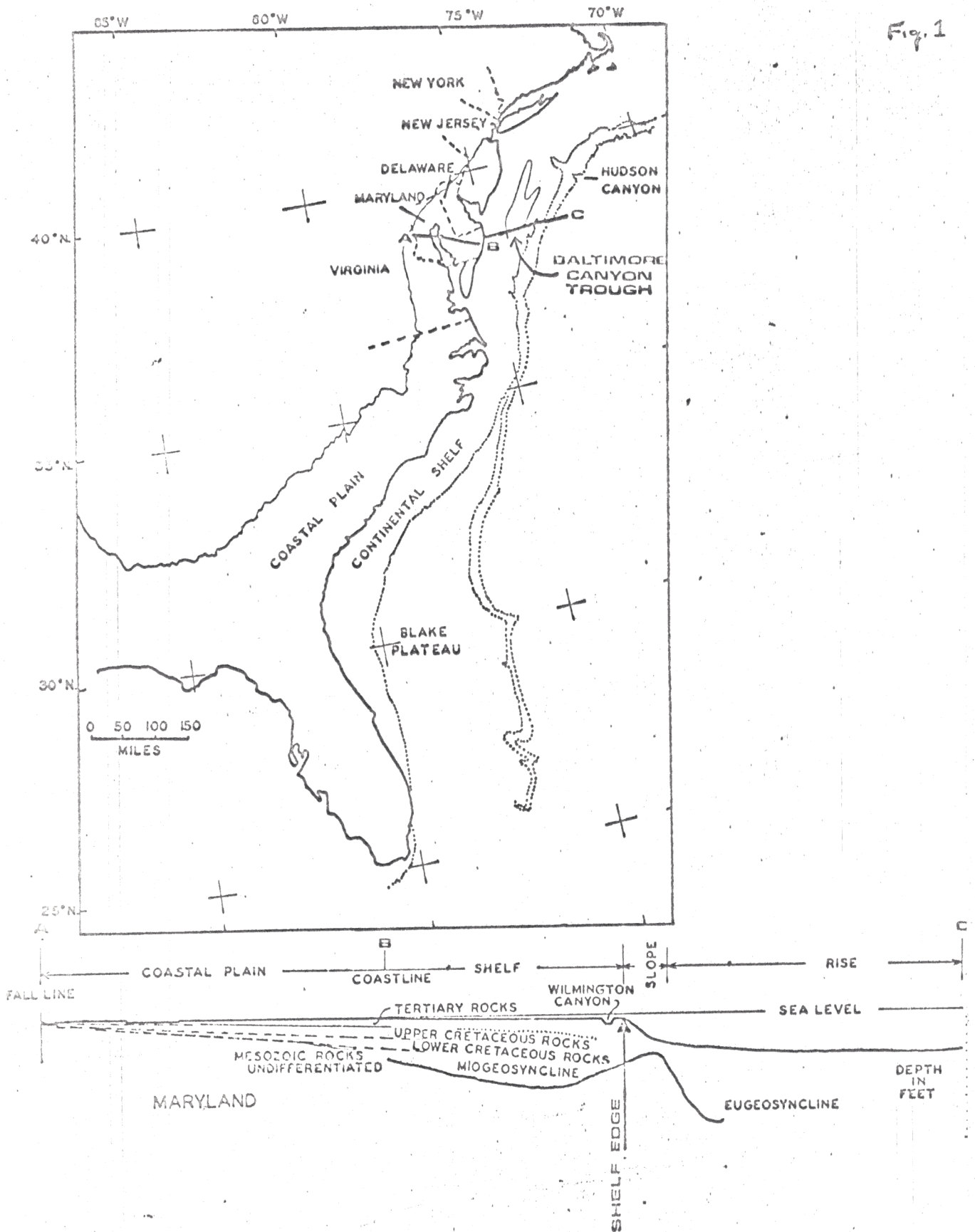
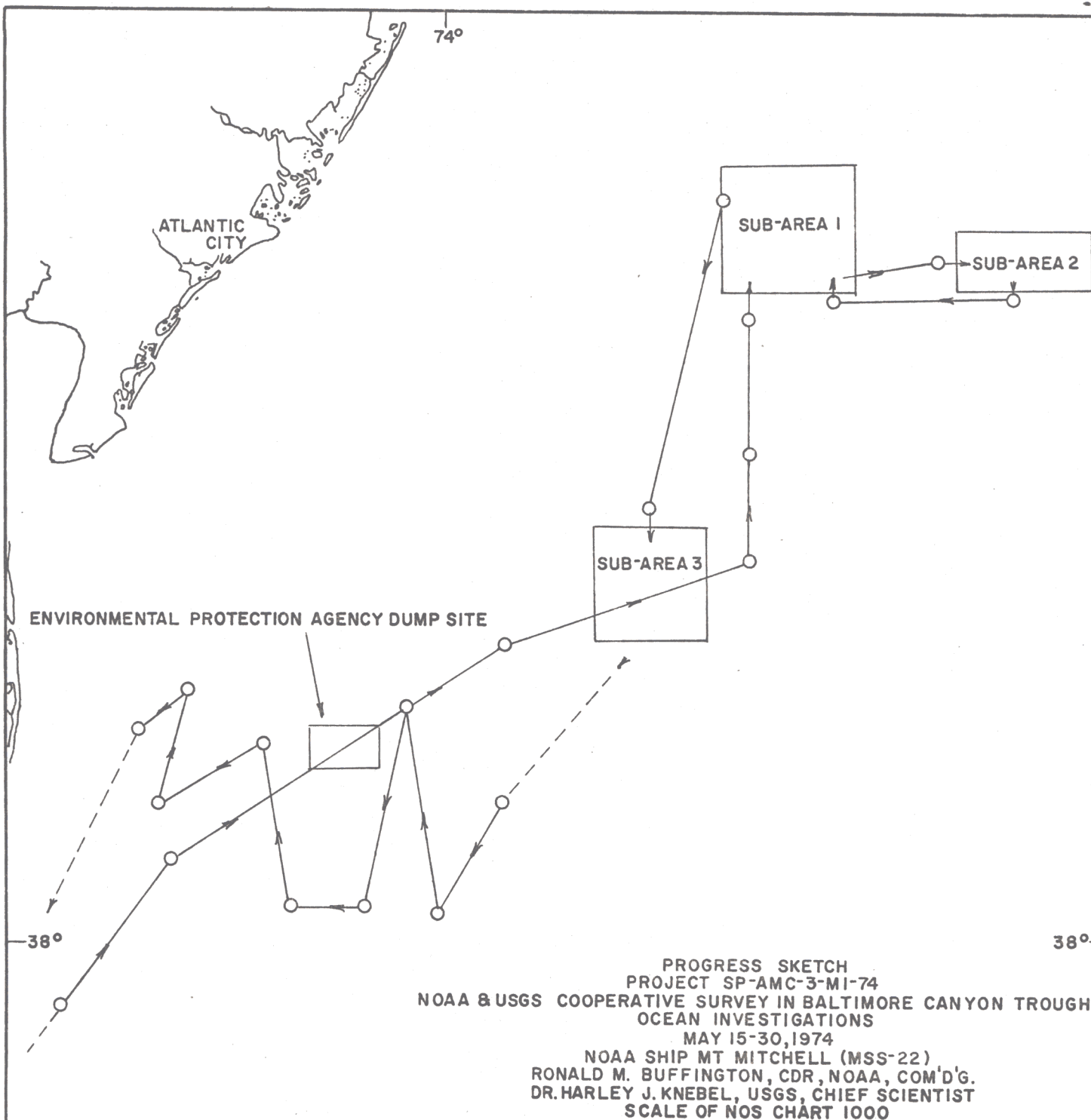




Fig. 1





	SUB-AREA 1	SUB-AREA 2	SUB-AREA 3	OTHER
L.N.M. SOUNDING LINE	4 3 3	1 3 3	2 0 0	3 9 3
L.N.M. DISTANCE TO & FROM				1 6 4
L.N.M. 3.5 KHZ HIGH-RESOLUTION SUB-BOTTOM SYSTEM	3 1 2	1 3 3	2 0 0	3 3 3
L.N.M. EG&G UNIBOOM HIGH-RESOLUTION SUB-BOTTOM SYSTEM	3 1 2	1 3 3	2 0 0	3 2 1
BOTTOM GRAB (MORE THAN ONE SAMPLE PER GRAB)	2 1 6		1 2	
SAMPLES FOR SIZE & COMPOSITION	1 0 8		6	
SAMPLES FOR BENTHIC ORGANISMS	1 0 8		6	
SAMPLES FOR HEAVY METALS	3 0		3	
SAMPLES FOR FORAMINIFERA	1 0 8		6	
SAMPLE STATIONS	8 7		6	
○ NANSEN CAST (1 BOTTLE, 2 PROTECTED THERMOMETERS)	3 2		4	

○ BOTTLE ON THE BOTTOM - OBSERVATION FOR SALINITY, TEMPERATURE, DISSOLVED OXYGEN

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V  
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M  
B  
E  
R  
1  
9  
7  
4

# BREAKFAST

CHILLED FRUIT JUICES  
CHILLED FRESH FRUITS ON TABLES  
CHILLED COOKED PRUNES  
COOKED OAT MEAL - ASST. DRY CEREAL  
EGGS TO ORDER - GRILLED SAUSAGE PATTIES  
MINCED MEAT ON TOAST  
COUNTRY FRIED POTATOES  
GRILLED HOT CAKES - FRENCH TOAST  
TOASTED ENGLISH MUFFINS  
TOAST - BUTTER - JAM  
FRESH MILK - COFFEE





# LUNCH

CLAM CHOWDER - SALTINE CRACKERS

BREADED FRIED SHRIMPS - SCALLOPS

FILET OF HADDOCK

TARTAR SAUCE - COCKTAIL SAUCE

BOILED BUTTERED PARSLEY POTATOES

BUTTERED PEAS & CARROTS

MIXED FRUIT SALAD

ASSORTED BREAD - BUTTER - JAM

PLAIN JELLO w/ TOPPING

FRESH MILK - COFFEE

ICED TEA w/ SLICED LEMONS





BEEF VEGETABLE SOUP - SALTINE CRACKERS

GRILLED T-BONE STEAKS TO ORDER

GRILLED SLICED HAM

MUSHROOM SAUCE

BAKED POTATOES

FRENCH FRIED ONIONS

BUTTERED WAX BEANS

COMBINATION SALAD

HOT BREAD - BUTTER - JAM

BLUEBERRY PIE A LA MODE

ICED TEA w/ SLICED LEMONS